

CLAIMS

What we claim is:

1. A fabric article comprising at least one polypropylene fiber possessing at most 5,000 denier per filament and exhibiting a heat-shrinkage in at least 150°C hot air of at most 11%, wherein said fiber further comprises at least one nucleating agent selected from the group consisting of dibenzylidene sorbitols, sodium and lithium phosphate salts, carboxylate salts of cyclic organophosphoric esters, and any mixtures thereof.
2. The fabric article of Claim 1 wherein said nucleating agent is a dibenzylidene sorbitol selected from the group consisting of monomethyl dibenzylidene sorbitols, dimethyl dibenzylidene sorbitols, trimethyl dibenzylidene sorbitols, and any mixtures thereof.
3. The fabric article of Claim 2 wherein said nucleating agent is selected from the group consisting of 1,3:2,4-bis(p-methylbenzylidene) sorbitol, 1,3:2,4-bis(3,4-dimethylbenzylidene) sorbitol, 1,3:2,4-bis(2,4,5-trimethylbenzylidene) sorbitol, Liquid 1,3:2,4-bis(3,4-dimethylbenzylidene) sorbitol, and any mixtures thereof.
4. The fabric article of Claim 1 wherein said article is non-woven.
5. The fabric article of Claim 1 wherein said article is woven.

6. The fabric article of Claim 1 wherein said article is knit.
7. The fabric article of Claim 2 wherein said article is non-woven.
8. The fabric article of Claim 2 wherein said article is woven.
9. The fabric article of Claim 2 wherein said article is knit.
10. The fabric article of Claim 3 wherein said article is non-woven.
11. The fabric article of Claim 3 wherein said article is woven.
12. The fabric article of Claim 3 wherein said article is knit.
13. The fabric article of Claim 1 wherein said at least one polypropylene fiber possesses a denier per filament of at most 1,000, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 9%, and wherein said at least one nucleating agent is present in an amount of at least 100 ppm.
14. The fabric article of Claim 13 wherein said at least one polypropylene fiber possesses a denier per filament of at most 500, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%, and wherein said at least one nucleating agent is present in an amount of at least 1250 ppm.

15. The fabric article of Claim 14 wherein said at least one polypropylene fiber possesses a denier per filament of at most 100 and wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%.
16. A fabric article comprising at least one polypropylene fiber possessing at most 5,000 denier per filament and exhibiting a heat-shrinkage in at least 150°C hot air of at most 11%, wherein said fiber further exhibits a fiber peak crystallization temperature measurement of at least 115°C as measured by differential scanning calorimetry in accordance with ASTM Test Method D3417-99 at a cooling rate of 20°C/min.
17. The fabric article of Claim 16 wherein said article is non-woven.
18. The fabric article of Claim 16 wherein said article is woven.
19. The fabric article of Claim 16 wherein said article is knit.
20. The fabric article of Claim 16 wherein said at least one polypropylene fiber possesses a denier per filament of at most 1,000, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 9%, and wherein said fiber peak crystallization temperature measurement is at least 116°C.

21. The fabric article of Claim 20 wherein said at least one polypropylene fiber possesses a denier per filament of at most 500, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%, and wherein said fiber peak crystallization temperature measurement is at least 116.5°C.

22. The fabric article of Claim 21, wherein said at least one polypropylene fiber possesses a denier per filament of at most 100 and wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%.

23. The fabric article of Claim 16 wherein said at least one polypropylene fiber further comprises at least one nucleating agent selected from the group consisting of dibenzylidene sorbitols, sodium and lithium phosphate salts, carboxylate salts of cyclic organophosphoric esters, and any mixtures thereof.

24. The fabric article of Claim 23 wherein said nucleating agent is a dibenzylidene sorbitol selected from the group consisting of monomethyl dibenzylidene sorbitols, dimethyl dibenzylidene sorbitols, trimethyl dibenzylidene sorbitols, and any mixtures thereof.

25. The fabric article of Claim 24 wherein said nucleating agent is selected from the group consisting of 1,3:2,4-bis(p-methylbenzylidene) sorbitol, 1,3:2,4-bis(3,4-dimethylbenzylidene) sorbitol, 1,3:2,4-bis(2,4,5-trimethylbenzylidene) sorbitol, Liquid 1,3:2,4-bis(3,4-dimethylbenzylidene) sorbitol, and any mixtures thereof.

26. The fabric article of Claim 23 wherein said at least one nucleating agent is present in an amount of at least 100 ppm.
27. The fabric article of Claim 26 wherein said at least one nucleating agent is present in an amount of at least 1250 ppm.
28. A fabric article comprising at least one polypropylene fiber possessing at most 5,000 denier per filament and exhibiting a heat-shrinkage in at least 150°C hot air of at most 11%, wherein said fiber further comprises at least one nucleating agent selected from the group consisting of dibenzylidene sorbitols, sodium and lithium phosphate salts, carboxylate salts of cyclic organophosphoric esters, and any mixtures thereof, and wherein said fiber further exhibits a long period of at least 20 nm as measured by small-angle x-ray scattering.
29. The fabric article of Claim 28 wherein said article is non-woven.
30. The fabric article of Claim 28 wherein said article is woven.
31. The fabric article of Claim 28 wherein said article is knit.

32. The fabric article of Claim 28 wherein said nucleating agent is a dibenzylidene sorbitol selected from the group consisting of monomethyl dibenzylidene sorbitols, dimethyl dibenzylidene sorbitols, trimethyl dibenzylidene sorbitols, and any mixtures thereof.
33. The fabric article of Claim 32 wherein said nucleating agent is selected from the group consisting of 1,3:2,4-bis(p-methylbenzylidene) sorbitol, 1,3:2,4-bis(3,4-dimethylbenzylidene) sorbitol, 1,3:2,4-bis(2,4,5-trimethylbenzylidene) sorbitol, Liquid 1,3:2,4-bis(3,4-dimethylbenzylidene) sorbitol, and any mixtures thereof.
34. The fabric article of 28 wherein said at least one polypropylene fiber possesses a denier per filament of at most 1,000, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 9%, wherein said at least one nucleating agent is present in an amount of at least 100 ppm, and wherein said fiber exhibits a long period of at least 22 nm.
35. The fabric article of Claim 34 where said at least one polypropylene fiber possesses a denier per filament of at most 500, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%, and wherein said at least one nucleating agent is present in an amount of at least 1250 ppm.
36. The fabric article of Claim 35, wherein said at least one propylene fiber possesses a denier per filament of at most 100 and wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%.

37. A fabric article comprising at least one polypropylene fiber possessing at most 5,000 denier per filament and exhibiting a heat-shrinkage in at least 150°C hot air of at most 11%, wherein said fiber further exhibits a fiber peak crystallization temperature measurement of at least 115°C as measured by differential scanning calorimetry in accordance with ASTM Test Method D3417-99 at a cooling rate of 20°C/min, and wherein said fiber further exhibits a long period of at least 20 nm as measured by small-angle x-ray scattering.

38. The fabric article of Claim 37 wherein said article is non-woven.

39. The fabric article of Claim 37 wherein said article is woven.

40. The fabric article of Claim 37 wherein said article is knit.

41. The fabric article of Claim 37, wherein said at least one polypropylene fiber possesses a denier per filament of at most 1,000, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 9%, wherein said peak crystallization temperature is at least 116°C, and wherein said fiber exhibits a long period of at least 22 nm.

42. The fabric article of Claim 41, wherein said at least one polypropylene fiber possesses a denier per filament of at most 500, wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%, and wherein said peak crystallization temperature is at least 116.5°C.

43. The fabric article of Claim 42, wherein said at least one polypropylene fiber possesses a denier per filament of at most 100 and wherein said fiber exhibits a heat shrinkage in at least 150°C hot air of at most 8%.

44. A fabric article comprising at least one polypropylene fiber possessing at most 5,000 denier per filament and exhibiting a heat-shrinkage in at least 150°C hot air of at most 11%, wherein said fiber further comprises at least one nucleating agent present in an amount of at least 1250 ppm.

45. A fabric article comprising at least one polypropylene fiber possessing at most 5,000 denier per filament and comprising at least one nucleating agent present in an amount of at least 1250 ppm, and wherein said fiber further exhibits a long period of at least 20 nm as measured by small-angle x-ray scattering.

46. The fabric article of Claim 45 wherein said fiber possesses a denier per filament of at most 1,000, wherein said at least one nucleating agent is present in an amount of at least 100 ppm, and wherein said fiber exhibits a long period of at least 22 nm.

47. A woven fabric having a length and a width and comprising at least 90% by weight of polypropylene fibers containing a nucleating agent at a concentration of greater than 1250 ppm wherein the area shrinkage of said fabric in after five home washings at a temperature of 60°C and 5 home dryings at a temperature of 75°C is less than 6%.

48. The woven fabric of Claim 47 wherein the shrinkage is less than 4%.

49. A knit fabric having a length and a width and comprising at least 90% by weight of polypropylene fibers comprising polypropylene fibers containing a nucleating agent at a concentration of greater than 1250 ppm wherein the area shrinkage after exposure to hot air at 150°C for five minutes is less than 12%.

50. A knit fabric having a length and width and comprising at least 90% by weight of polypropylene fibers containing a nucleating agent selected from the group consisting of dibenzylidene sorbitols, sodium and lithium phosphate salts, carboxylate salts of cyclic organophosphoric esters, and any mixtures thereof, at a concentration of greater than 100 ppm wherein the area shrinkage after five home washings at a temperature of 60°C and five home dryings at a temperature of 75°C is less than 10%.

51. A molded non-woven fabric comprising at least 90% by weight of polypropylene fibers wherein said molded non-woven fabric exhibits a shrinkage amount of at most 12% as compared with the same non-woven fabric prior to molding.